



Aldo Leopold Legacy Center, Baraboo, WI

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# Model Codes: What's New for the 2021 IECC and Standard 90.1-2019?

May 2019

# ICC IECC Code Change Hearing Statistics

- Approximate number of code change proposals: 550
- Number of lead proponents: 97
- Number of hearing days: 11
- Number of hearing hours: 110
- Thousands of hours of preparation before the hearings

# Our Speakers Today

Jim Meyers

Director of the Buildings  
Program at the Southwest  
Energy Efficiency Project  
(SWEEP)

Member of the ICC IECC  
Residential Code  
Development Committee

Duane Jonlin

Energy Code and Energy  
Conservation Advisor for  
Seattle's Department of  
Construction and Inspections

Member of the ICC IECC  
Commercial Code  
Development Committee

Voting Member of ASHRAE  
90.1 Committee



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# Renewables in the 2021 IECC

May 2019

NBI is a national nonprofit working to improve buildings for people and the environment.

## Program Areas:

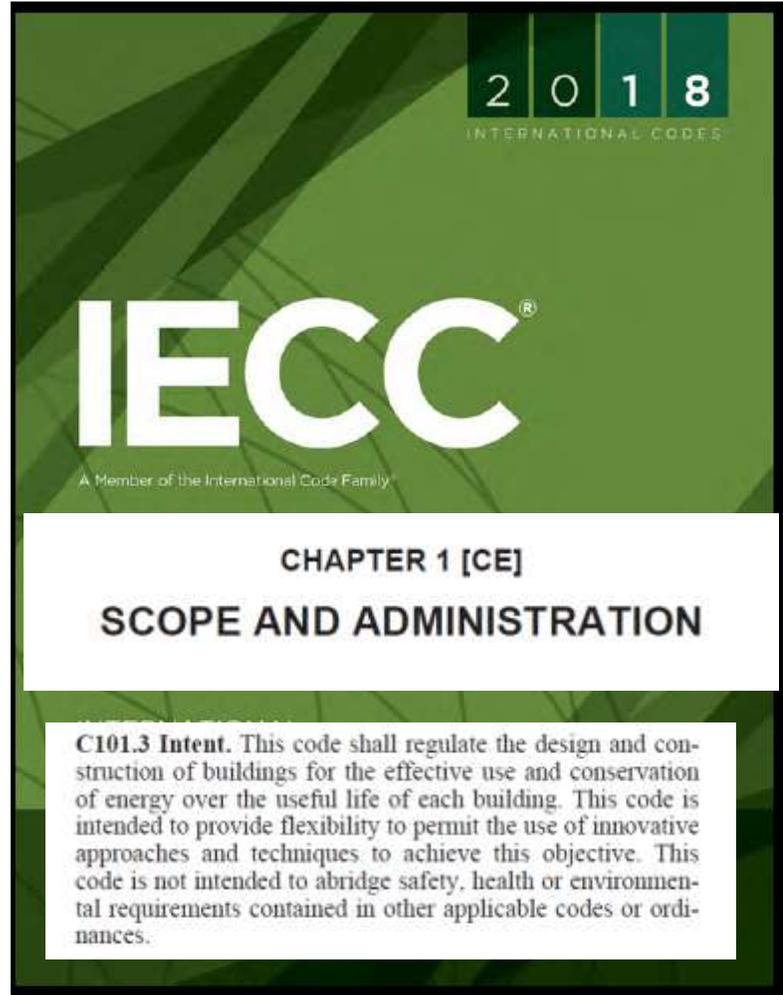
1. Zero Energy Leadership
2. Building and Program Innovation
3. Advancing Codes and Policy



# Renewable Code Change Proposal Themes

- Renewable Intent
- Defining renewables
- Renewable energy certificates
- Requiring renewables
- Renewable trade-offs
- Requiring electric storage

# Add Renewables to the Intent



## Modification of IECC Intent (D)

*“effective integration of energy efficiency measures, **renewable energy systems, and energy storage systems.**”*

# Renewable Definitions

## Residential Definitions

**ON-SITE RENEWABLE ENERGY (A).** Energy from renewable energy resources harvested at the building site.

**RENEWABLE ENERGY RESOURCES (A).** Energy derived from solar radiation, wind, waves, tides, landfill gas, biogas, biomass or extracted from hot fluid or steam heated within the earth.

## Commercial Definitions

**ON-SITE RENEWABLE ENERGY (A).** Energy from renewable energy resources harvested at the building site.

**RENEWABLE ENERGY RESOURCES (A).** Energy derived from solar radiation, wind, waves, tides, landfill gas, biogas, biomass or extracted from hot fluid or steam heated within the earth.

# Renewable Energy Certificate



## Defines Renewable Energy Certificate (REC) (*D*)

**RENEWABLE ENERGY CERTIFICATE (REC).** An instrument that represents the environmental attributes of one megawatt hour of renewable energy; also known as an energy attribute certificate (EAC).

Requires that REC is retired on behalf of the homeowner, or

Contract that conveys to the homeowner the RECs of the onsite renewable resource or equivalent quantity of RECs from other renewable systems

# Requiring renewables



## Require Renewables on Commercial Buildings (*D*)

- Onsite renewable energy with a rated capacity of  $0.25 \text{ W/ft}^2$  X gross floor area of 3 largest floors
- Exceptions where not feasible or practical

# Requiring Renewables Commercial (D)

## Appendix CB

### SOLAR PHOTOVOLTAIC (PV) SYSTEM REQUIRED - COMMERCIAL

- Requires solar PV system for commercial buildings  $\geq 5,000$  ft<sup>2</sup>
  - Capacity  $\geq 0.25$  X conditioned floor area for  $< 4$  stories
  - Capacity  $\geq 0.25$  X conditioned floor area of 3 largest conditioned floors  $\geq 4$  stories
- Sources
  - Onsite
  - Community solar
  - Leases and purchase power agreements (PPA)

# Requiring Renewables Residential (AM)

## Appendix U

### SOLAR PHOTOVOLTAIC (PV) SYSTEM REQUIRED

- Requires solar PV system for low-rise residential buildings
- Capacity  $\geq 1$  Watt X conditioned floor area, or
- Capacity to meet 75% of the buildings total electricity use on an annual basis
- Sources
  - Onsite
  - Community solar
  - Leases and purchase power agreements (PPA)

# Renewable Trade-offs (D)

CLIMATE ZONE	ENERGY RATING INDEX <sup>a</sup>
1	<del>57</del> <u>52</u>
2	<del>57</del> <u>52</u>
3	<del>57</del> <u>51</u>
4	<del>62</del> <u>54</u>
5	<del>61</del> <u>55</u>
6	<del>61</del> <u>54</u>
7	<del>58</del> <u>53</u>
8	<del>58</del> <u>53</u>

- Proposal deletes the 2015 IECC “backstop” if using renewables
  - 2009 IECC backstop remains in-place
- Lowers ERI values to 2015 IECC levels

# Zero Energy Residential (D)

**TABLE RB103.2**  
**MAXIMUM ENERGY RATING INDEX**<sup>a</sup>

<u>CLIMATE ZONE</u>	<u>ENERGY RATING INDEX</u> <u>not including onsite</u> <u>power</u>	<u>ENERGY RATING INDEX</u> <u>including onsite power</u> <u>(as proposed)</u>
<u>1</u>	<u>43</u>	<u>0</u>
<u>2</u>	<u>45</u>	<u>0</u>
<u>3</u>	<u>47</u>	<u>0</u>
<u>4</u>	<u>47</u>	<u>0</u>
<u>5</u>	<u>47</u>	<u>0</u>
<u>6</u>	<u>46</u>	<u>0</u>
<u>7</u>	<u>46</u>	<u>0</u>
<u>8</u>	<u>45</u>	<u>0</u>

<sup>a</sup>The building shall meet the mandatory requirements of Section R406.2, and the building thermal envelope shall be greater than or equal to the levels of efficiency and SHGC in Table R402.1.2 or Table R402.1.4. of the 2015 *International Energy Conservation Code*.

# Residential Renewable Trade-offs (D)

**REM/Rate**<sup>TM</sup>

**EnergyGauge**<sup>®</sup>  
Energy and Economic Analysis Software

**ekotrope** 

Renewables in Simulated Performance

- Allow on-site renewables to be considered as a reduction in energy use in the building

# Commercial Renewable Trade-offs (D)



## Renewables in Simulated Performance

- Allow unlimited use of renewables

# Renewable Energy Storage Ready (D)



Add to Solar Ready Appendix

- Indicate on construction documents electrical energy storage system area
  - Minimum 2 ft X 4 ft
  - Reserved space in electrical panel for dual pull circuit breaker

# JOIN US IN OAKLAND!

Join us at the premier global event dedicated to creating a zero energy, zero carbon future for the built environment.

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GETTING TO  
**zero**  
FORUM 2019

October 9-11  
OAKLAND MARRIOTT  
Oakland, CA  
[gettingtozeroforum.org](http://gettingtozeroforum.org)



# Thank You!

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David and Lucille Packard Foundation Building  
Courtesy: EHDD